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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Dental laboratories provide a vital service to the dental clinician. Almost every Army dental clinic has its own laboratory and trained technicians, both military and civilian. There are also four large central dental laboratories in the Army Dental Care System, called Regional Dental Activities (RDA). Their mission is primarily to support a number of Dental Activities within a certain geographical area of responsibility by providing prosthetic laboratory support. As a consequence there is some duplication of effort. The purposes of this

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study were threefold: (1) to determine the actual utilization of dental laboratory technicians at the local dental activities; (2) to determine which type of laboratory, local or regional, is more productive in terms of average output per technician, and (3) to study the desirability of submitting a procedure-specific quarterly report to higher headquarters which would improve management of the local dental laboratories (as a system). Four installation dental activities were studied, including the dental laboratories at one Medical Center (MEDCEN) and three Medical Department Activities (MEDDAC). The data collection mechanism employed in the RDA reporting system was used and proved to be a feasible method of reporting laboratory procedures and technician utilization data at the MEDCEN/MEDDAC level. It was concluded that: (a) Average production per technician at the installation level compared favorably to the RDAs; but, there was a large variance among the four laboratories studied both in average production per technician and total production, even among laboratories of the same size; (b) A procedure-specific report, such as now submitted by the RDAs, would provide HSC with an improved resource management tool with very slight additional effort at the local level. Such a reporting system has been identified by this study.

Summary

This study was requested by the Deputy Commanding General for Dental Services, Health Services Command, in September 1977. The Health Care Studies Division (HCSD), Academy of Health Sciences, was tasked to perform the study by the Commander, Health Services Command, US Army. The overall purpose of this study was to determine the productivity of installation (USAMEDD) dental laboratories in clear and identifiable terms, specifically how much work they do and exactly what types of tasks are accomplished.

The objectives of the study were threefold: (1) to determine the actual utilization of dental laboratory technicians at the local installations; (2) to identify the laboratory type, local or Regional Dental Activity, which is more productive in terms of average output per technician assigned; and (3) to examine the desirability of local installations submitting a procedure-specific quarterly laboratory report such as the central laboratories (RDA) submit monthly. The dental services of one Medical Center (MEDCEN) and three Medical Department Activities (MEDDAC) collected data for the survey.

At each installation the dental laboratory personnel strength and the actual number of hours worked by each assigned technician were recorded daily. When summarized, this data revealed that, in general, laboratory technicians were utilized in the field for which they are trained and that military and other non-laboratory duties did not interfere with the performance of their primary duties to any greater degree than at Regional Dental Activities. Approximately eighty percent of the available productive time was spent at the bench in productive activity.

Each discrete, identifiable task for which credit can be taken during the fabrication of the various prosthetic appliances and in the accomplishment of other laboratory procedures was recorded. This information was processed using the computer program developed for and used by the Army Regional Dental Activities. This program provided a production analysis report for each installation containing the following production data: (a) the total Weighted Work Units for each of 75 identifiable laboratory tasks for the period of the study; (b) the average daily Weighted Work Units (WWU) for each laboratory; and (c) average technician strength and productivity to include:

1 Average daily number of technicians assigned.

2 Average daily technician hours present for duty.

3 Average daily Weighted Work Units per assigned technician.

4 Average WWU per technician hour.

Descriptive statistics were utilized to compare each test site against the others and to the Regional Dental Activities, both for productivity and for technician availability. Results showed that average production per

technician in the local laboratories compared very favorably to that of the RDAs, but that there was a great variance among each of the local laboratories. In comparison, average individual productivity at each of the RDAs was quite uniform. Test results also showed that the percent of available time engaged in productive activity by technicians at the local installations compared very favorably to that of the RDAs; in fact, each of the local labs exceeds the highest reported by any RDA.

The results of the study indicate that there is a great variance in both the quantity and type of laboratory prosthetic production at local dental laboratories, even among those of comparable size. The data also indicate that for improved resource management, the installation laboratories should submit periodic reports which are procedure specific and which provide higher headquarters with laboratory technician utilization data.

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COMPARISON OF THE OUTPUT IN WEIGHTED WORK UNITS OF INSTALLATION DENTAL LABORATORIES WITH THAT OF REGIONAL DENTAL ACTIVITIES

1. INTRODUCTION.

a. Purpose.

(1) The overall purpose of this study was to determine the productivity of installation (USAMEDD) dental laboratories in the clear and identifiable terms specified in AR 40-182, Regional Dental Activities Report. At the present time the individual Dental Activities submit as a part of the quarterly report the sum of prosthetic Weighted Work Units produced at their installation. This report does not specify what kinds of work are being done nor the human resources utilized in that production.

(2) The information obtained by the study will be useful to the Deputy Commander for Dental Services, US Army Health Services Command, in evaluating the effectiveness of the laboratory effort at the local level and in assigning material, human, and financial resources to this effort in the future.

b. Background.

(1) Dental prosthetic laboratory support is provided at two organizational levels. There are local laboratories which are an integral element of each MEDCEN/MEDDAC dental service. There is also a Regional Dental Activity system which consists of four large dental laboratories. The local laboratories are responsible only for their own dental service requirements. Each of the Regional Dental Activities is responsible for a number of installations based partly upon geographical area and partly upon the capability of the particular RDA, the latter a function mainly of size in terms of personnel assigned.

(2) There are certain laboratory procedures which local laboratories cannot do. Such tasks as the fabrication of metal frameworks for removable partial dentures require specialized equipment which is too complicated and expensive to place in every local laboratory. Further, such equipment must be used in a cost-effective manner which would not be possible at the installation level. Thus the need for a large central laboratory is established. The RDAs also do much of the same kinds of work that is being done at the local level. RDAs, being large, are organized more on the basis of an industrial facility, stressing division of labor and the departmentalization concept. In other words, economies of effort are achieved through an assembly line approach to production.

The laboratories at the installation level are vital to the mission of the dental service. They perform tasks which can only

be done on the spot and on an immediate basis. Thus, their need is also established. But the local laboratories do many other things too. Much of what they do can and is being done by the RDAs also. The local laboratories are organized like a cottage industry. One person may carry a particular appliance through from start to finish, in contrast to the RDA where the appliance is produced in a series of discrete operations performed by a number of different technicians who (presumably) are highly skilled, if by virtue of no more than repetition of the same tasks.

Staffing of technicians at the local laboratories is based upon the number of dentists assigned, their specialties, and the presence of training programs. Based upon these criteria, an assumption is made about how much and what kinds of work the technicians will be asked to do. However, there is no data upon which such staffing can be based which would give a more reliable estimate of the requirements. The Regional Dental Activities are staffed according to criteria based upon their production, which can be accurately verified in detail.

(3) Local dental laboratories document and report their production in a general way with no tabulation by specific product or procedure. There is available no information relating to the productivity of the local laboratories in terms of individual output or in terms of how much of each type of work is being done.

2. OBJECTIVES.

The objectives of this study were:

a. To determine the actual utilization of dental laboratory technicians at the local installation laboratories.

b. To identify the laboratory system, local or Regional Dental Activity (RDA), which is more productive in terms of average output (in WWU) per technician available.

c. To examine the desirability of the submission of a procedure-specific quarterly report by the local laboratories which would serve Health Services Command as an improved installation dental laboratory management tool.

3. METHODOLOGY.

a. Overview. The study was conducted at one MEDCEN and three MEDDAC dental activities. All dental laboratory procedures accomplished at the installations were reported according to the method used in the RDA system. Data was submitted to the project officer at Health Care Studies Division, Fort Sam Houston, Texas for monitoring and correction

of errors. Data was transferred to punch cards and analyzed by Systems Division, HCSSE, DMIS, HSC. Reports were forwarded to HCSD for analysis.

b. Procedure.

(1) A Prosthodontic Procedure Record (Appendix A-1) was initiated for each case submitted to the laboratory. The form was devised for this study and was designed to permit multiple entries on the same case. This reduced paperwork and eased the clerical burden on the technicians and supervisors.

(2) Utilizing Blocks 5 and 6 of the form, the procedures accomplished were narratively described and the procedure code entered according to AR 40-182 (Appendix A-2). The purpose of this double entry was to permit the investigator to check the accuracy of the entries. The entries on the form were made by the technician and checked by the laboratory supervisor.

(3) Coded Prosthodontic Procedure Records (PPR) were collected when work on a particular case was complete and submitted weekly to HCSD. Even though a particular case was not completed at the end of the study, all PPRs remaining in the laboratories were collected and returned to HCSD. The information from all PPRs was posted to the keypunch worksheet (Card A, Appendix A-3) by the project officer.

(4) To investigate technician utilization data and to obtain an accurate measure of technician productivity, a daily laboratory technician roster was maintained by each laboratory during the study period (Appendix A-4). Coding instructions for Card B, Technicians present for duty, are shown at Appendix A-5.

(5) The backlog of work remaining was reported at the close of business of the day preceding the first day of the data collection period and at the end of the period (Card C, Appendix A-6).

(6) Computer processing of the data was accomplished utilizing the RDA program at HSC DMIS.

(7) The sample data was obtained from the following MEDCEN and three MEDDACS: William Beaumont Army Medical Center, Fort Bliss, Texas; Fort Rucker, Alabama; Fort Benning, Georgia; and Fort Carson, Colorado.

c. Data Analysis.

For the purpose of data consolidation and computer listing, the Regional Dental Activity accounting system was used. This system is currently an active program on the Health Services Command DMIS computer. A computer printout provided the following data for analysis:

(1) A production analysis report containing production data:

a by weighted work unit (WWU).

b by major dental prostheses.

c by cases on hand on the last day of the test period by major dental category (i.e., fixed prostheses, removable prostheses, orthodontics, and other/miscellaneous.

d monthly average of time in laboratory for procedures 01, 05, 20, 25, and 43 (Appendix A-3).

e average daily weighted work units.

f average daily strength and productivity to include:

1 average daily number of technicians assigned.

2 average daily technician hours present for duty.

3 average daily weighted work units per assigned technician.

4 average weighted work units per technician hour.

(2) A production report giving the total number, the types of material used for each procedure, and the average number of days required for each procedure.

(3) A separate station report showing the number of procedures and weighted work units accomplished at each study site.

(4) A consolidated production analysis report with the cumulative data as in c(1) and (2) above for the four study sites. This report provided a total overview of dental laboratory production at the study sites and was used to compare the local laboratories as a "system" with the RDA system.

4. FINDINGS.

a. The data collected at the four study sites were analyzed and reviewed by the investigators with the assistance of Colonel James Brudvik, DC, the Fort Sam Houston RDA commander.

b. November was selected as the test period because input was expected to be high, thus insuring adequate utilization of the dental technicians. Tables 1 and 2 show the available productive time involved in productive laboratory activity by the technicians at both the study

sites and the Regional Dental Activities. The number of civilian technicians employed at each study site and their ratios to the total laboratory force is shown in Table 3. Table 4 presents the amount of RDA-specific laboratory work performed at the installation laboratories and compares it to the total production at each site. The average daily weighted work units (WWU) produced per assigned technician at the study sites and at the RDAs are presented in Tables 5 and 6, and the total average daily WWUs produced at the same locations are shown in Tables 7 and 8. Tables 9 and 10 show the average weighted work units produced per technician hour at the study sites and at the RDAs. The number of dental casts made at each of the study sites is shown in Table 11. Table 12 shows those tasks performed almost exclusively at local laboratories and the quantity of each produced. Table 13 shows the average number of days-in-lab for selected procedures at the study sites. The production of key indicator appliances fabricated at study sites B, C, and D during the study period is presented in Table 14.

c. A sample of the Consolidated Production Analysis Report (composite study data) is at Appendix A-7. Appendix A-8 is a sample of a Production Analysis Report from one of the individual sites.

d. A sample of the Procedure Report for one of the study sites is at Appendix A-9. This report consists of a listing of all the types of procedures performed during the test period, the number produced, the weighted value for each procedure, and the average stay in the laboratory.

5. DISCUSSION.

a. An analysis of the Daily Laboratory Technician Roster worksheets (Appendix A-4) showed that, with relatively few exceptions, the military technicians were assigned to the dental laboratory and not to other duties in the clinics. The civilian laboratory technicians did not work outside of the dental laboratory in any instances. A significant finding, however, was that when a military technician was assigned to duties elsewhere in the clinic this person was usually a senior technician (42D30). For example, Site A had two 42D30 technicians assigned out of an average total of four laboratory technicians. During the first week of the test period both 42D30s were assigned full time as clinic NCOICs. This happened again during the fourth week. During the other three weeks, one or the other of the 42D30s spent an entire week away from the laboratory functioning as a clinic NCOIC.

At various times during the study at Site A, the 42D10s were utilized as dental assistants, x-ray technician, or a sterilization technician. During the second week of the test at one clinic, the 42D10 was detailed for duties away from the dental laboratory. During the third and fifth weeks a 42D10 spent the entire week away from the lab performing duties elsewhere in the clinic.

At Site B, the military technicians were not taken away from their primary duties for service elsewhere in the clinic on a regular basis. Two 42D10 laboratory technicians were away from their duties for three days each during two different weeks of the testing period. None of the more senior laboratory technicians (42D or F20 or 30) was absent from their primary work areas for extended periods of time. Site B has nine other MOS 42D and F personnel assigned who are detailed to duties outside the laboratory on a permanent basis.

At Site C none of the military laboratory technicians were reported as being assigned to duties other than in their respective clinic laboratories.

At Site D, one senior laboratory technician was assigned to duty as a clinic NCOIC during the entire test period. Except for the first week, there were considerable hours lost from available productive time by military technicians at both clinics studied, the reasons unspecified. For example, during the second week, 36 hours; third week, 47 hours; fourth week, 63 hours; and fifth week, 34 hours were lost. However, this installation is also the one which reported the highest productivity in terms of WWU per available technician hour.

It can be generalized that at the sites studied and for the duration of the study, military requirements and other non-laboratory duties did not seriously interfere with the technicians' primary duties. The one exception may be at Site A, where one or both senior military technicians were away from the bench for most of the test period performing duty as a clinic NCOIC. Those absences may be significant because these persons are experienced members of a small staff which averaged only four persons. At the other installation where a senior technician was assigned other duties, this person was part of a much larger staff (11-13) which could more easily continue production at normal output.

Another means by which the effective utilization of laboratory technicians, both civilian and military, can be measured is to compare the average daily technician hours present for duty to the number of available work hours during that day. The latter figure is derived by multiplying by eight hours the average daily number of technicians assigned. As can be seen from Table 1, the percent of available productive time involved in productive activity ranged from a low of 83.6% at Site C to the high of 87.2% at Site D.

These figures reported by the installation laboratories compare very favorably to those reported by the laboratories in the RDA system. Table 2 indicates that the RDA as a system reported that their technicians were engaged in productive activity during almost 78% of the available work hours, the range being from a low of 74.3% to a high of 80.5%. A

higher proportion of civilians on the staff will produce a higher figure because it has been the experience of RDA commanders that the civilian technicians are away from their jobs less than their military counterparts. This observation was not verified by actual statistics. Of the laboratories which were studied, the ratio of civilian to military technicians was approximately 1:1. Site A has two civilians, Site B has nine, Site C has five, and Site D has six. As can be seen from Table 3, both Sites A and D have a slightly better ratio of civilians to military than the other sites. The slight fluctuations in technician strengths which occur from day to day are a result of the temporary reassignment of the military technicians. The civilian technicians are not assigned to other duties, and there were no civilian technicians hired or released at any of the installations during the period of the study.

As noted earlier, the civilian percentages of the total assigned technicians was very similar at all of the study sites. Site D, which reported the highest output in terms of average WWU per available technician, had the second best ratio. Site A, which reported the lowest output in average WWU has the best percentage of civilian technicians. However, it must be observed that Site A is a small installation and there were only about four technicians assigned. This laboratory supports a relatively small number of dentists and does not have the volume of work generated for it as does Site D where there are many more dentists, more specialists, and specialty training programs.

The study did not seek to discover how many military dental laboratory technicians were assigned to the unit whose duty MOS was other than as a technician. It was concerned only with those technicians whose primary duty was in the laboratory, and how they were utilized.

b. All of the laboratories studied have the capability to perform the same kind of procedures as do the RDAs. There is one major exception, the fabrication of removable partial denture frameworks, specifically those made from chrome-cobalt or chrome-nickel alloys. Only RDAs have the equipment to fabricate these. A discussion of laboratory productivity might be more relevant if it were examined from two points of view. One is the type of work which is performed at the local installation laboratories which <u>could</u> be provided by the RDAs. This will be identified by the term RDA-specific. The other is to consider those tasks which can only be done at the local level, such as pouring models, articulating casts, and making dies. This will be termed local-specific. In other terms, it would be helpful to discuss this question on the basis of the kinds of tasks which only the local laboratory can perform in <u>direct support</u> of the dentists, and those procedures which could be forwarded to an RDA for fabrication without causing any real disruption or diminishment to optimal patient care.

For the purpose of this discussion, those tasks which are considered to be RDA-specific are Procedures 01, 02, 03, 05, 06, 07, 08, 09, 10, 11, 20, 21, 22, 23, 24, 25, 43, 44, 45 (See Appendix A-2 for listing and description of these procedures). As mentioned previously, local laboratories can do most of these procedures as well, with a few exceptions. The other procedures listed in the Appendix are those tasks generally considered to be the type of work which the local laboratories perform to give direct support to the dentist. There are a few exceptions here too, such as the fabrication of swing-lock and other sophisticated appliances. But these are made infrequently and have no bearing on this discussion. Also, orthodontic work will not be considered. It will be addressed at greater length later in the discussion.

Site A produced 2647 weighted work units (WWU) during the test period. Of this total, 2060 WWU represents those procedures generally considered to be RDA-specific and is 77% of the total output for the period. These 2060 WWU consisted of 43 units of fixed prostheses (crown and bridge) and 23 units of removable denture work, the latter figure sometimes representing two or more procedures on one case. Based upon a 21-day working month, the duration of the test period, this is 3.14 units per day. Other types of local-specific laboratory work, such as making casts, did not appear to significantly interfere with the technicians' ability to perform RDA-specific work. In view of these figures, it might be assumed that technicians either were not working productively or they did not have enough work to keep busy. The latter does not appear to be the case, since there were 111 units of crown and bridge on hand at the beginning of the test period and 82 units on hand at the end of the period. Only 43 units were produced during the test period. A further comment could be made that in view of the meager production the activity has a requirement for fewer technicians and these technicians could be graded at the medium skill level.

A special situation prevailed at Site B. This is the only test site which supports an orthodontist. Orthodontic appliances are weighted at 50 WWU each, regardless of type and complexity. At Site B a laboratory staffed by just two technicians accounted for 5590 WWU, an average of 2795 WWU each for the test period. This is far above the technician average for even the most productive reporting station. Orthodontic appliances accounted for 26% of the total production for the site. In order to make a valid comparison the orthodontic production will be deducted from the total and not considered.

With the orthodontic appliances removed from the total output, Site B produced 15673 WWU during the test period. Of this total, RDA-specific procedures accounted for 10729 WWU or 68%. This is not as great as Site A, but it means only 32% of this stations' laboratory output represents those tasks which directly support the dentist and could not be done elsewhere.

Site C produced a total of 9857 WWU during the test period. Of this, 6762 WWU or 68% represents those types of tasks for which the RDA system has the primary responsibility. Even though the type of laboratory work done by this activity during the period in direct support of the clinician represented only 32% of its total output, it should be pointed out that many of these tasks, though not weighted heavily, require a considerable amount of technician time. It should also be pointed out that most of them can be performed by technicians in the lower to middle range skill levels, whereas many of the fixed and removable procedures require technicians of considerably greater expertise and experience.

An analysis of the procedure reports for Site D indicates that the dental laboratories there also produced a large volume of fixed and removable prosthetics. Of the total of 22609 WWU, 15327 WWU or 67% consisted of RDA-specific work.

One objective of this study was to determine which laboratory system, local or RDA, is more productive in terms of average output (in WWU) per technician available. It is difficult to describe a collection of local laboratories as a system because each is so different from the other in such characteristics as size, mission, average grade (civilian and military), and administration.

Table 5 reveals a wide variance in average daily WWUs for the individual stations. However, the consolidated figure may give some indication as to the local laboratories' performance as a system. As can be seen from Table 5, only one station approaches the "system" average daily WWU per assigned technician. It is not within the scope of this report to pinpoint the reasons for those values which deviate greatly from the average as do sites A and D.

To compare the productivity of the two systems, it is useful to examine the production reports for the four Regional Dental Activities during the same time period of this study. This information is presented in Table 6.

Another way to examine the question of production in terms of available technicians is to compare the total average daily weighted work units produced at the installations with the production at each of the Regional Dental Activities. The figure given in the computer printout is based upon a 30-day month to comply with Department of the Army policy. The actual number of working days available during the test period was 21. Figures for both the 30-day month and the 21-day work month will be presented because the latter gives a more realistic representation of the actual situation.

Tables 7 and 8 portray graphically the daily production at each of the local laboratories and the RDAs. They merely indicate the production potential for both "systems" and there should be no attempt to

make comparisons on this basis. The Regional Dental Activities are all much larger than any of the local laboratories and thus have both greater potential and larger capacity for production. If each dental installation submitted procedure specific production reports on a monthly basis using the available computer program, it would be possible to see at a glance exactly how the two "systems" rank in terms of total production and in terms of productivity per assigned individual. No such comparisons are now possible.

The productivity of any laboratory in the final analysis depends upon the number of available technician hours. In other words, how much of the eight-hour day does the technician spend in productive activity, and how productive is this individual? Earlier in the discussion it was pointed out that the percent of time involved in productive activity by the technicians at the local installations ranged from 83% to 87%. This compares very well with the RDAs which report on an average figure of 78%. The importance of these figures is associated with what the technicians do with this time.

The production analysis reports show that as "systems," the RDAs and the four local installations produce almost the same number of weighted work units per technician hour (See Tables 9 and 10). However, the range of values among the RDAs is quite narrow, whereas the range among the local laboratories is very wide. The sample of local installations is quite small and cannot be presumed to represent all of the laboratories in Army dental activities. The reasons for the wide range of values reported by the local laboratories can only be conjectured. They are not really organized as a system nor are they as professionally managed as are Regional Dental Activities.

c. There are a number of dental laboratory tasks performed often during a typical working day which interrupt or interfere with other tasks which must be put aside. Impressions for dental casts must be poured quickly to prevent inaccuracies caused by the distortion of impression materials which occurs upon standing. Other tasks, though not of such immediacy, are performed almost exclusively at the clinic level in direct support of the dentist or are intermediate steps in the construction of dental prostheses. Do either of these two groups of tasks have a significant impact on the local laboratories' ability to do other work on a timely basis?

Table 11 shows the number of dental casts made at each of the test sites. Procedure 36 includes casts of all types, except those for fixed prostheses. Procedure 16 includes casts made for fixed prostheses and the removable dies which are a part of the cast. Each removable die is counted as one cast. Time-in-lab is not given because virtually every one of these casts was completed and returned to the doctor in one day or less.

Table 12 depicts the second group of tasks, those which are performed mostly at the local level in direct support of the dentist or are intermediate steps in the construction of some dental prostheses. The length of time each case remained in the laboratory and the number of times each procedure was accomplished are also depicted.

Because the data were not received in a form that could be subjected to rigorous statistical analysis none was performed. The time-in-lab data for the tasks listed in Table 12 indicate that all of them could be accomplished on a timely basis. Site C, however, has generally longer time-in-lab than either B or D. Site C also made more casts than either B or D. Both of these findings are consistent with the total production at Site C, which was lower than both B and D. They may indicate that the production of fixed and removable prostheses was hindered both by the large number of casts to be made and by the inability of the lab to accomplish the support-type procedures, as seen in Table 12, as quickly as could the other two labs. In general, Site C produced fewer of the local-specific and intermediary procedures than did Sites B and D. This too is consistent with the longer in-lab time for these procedures.

Site C posted generally longer in-lab time for those procedures selected by the DMIS computer program for analysis. As seen in Table 13, the in-lab time for procedure 01, fully fabricated fixed partial denture, was four days longer for Site C than Site B and ten days greater than Site D. The time-in-lab for procedure 43, set-up and wax-up, complete denture, was five days for Site C, two days longer than for Site B and three days greater than Site D. Site A is not included in this discussion because its volume was too small to make reasonable comparisons. The lower production at Site C is also illustrated by the number of units of fixed partial dentures and crowns produced as compared to Sites B and D. Its production of the key indicators in removable prostheses lagged significantly behind the other two labs as can be seen in Table 14. Site D also outperformed Site B. Site D reported an average strength of eleven technicians assigned, whereas Site B had an average of almost nineteen technicians assigned, two of whom were engaged full time in support of the orthodontists. If the orthodontic weighted work units are subtracted from the total for Site B, it produced 15673 WWU as compared to 22609 for Site D which did almost no orthodontic laboratory work. It is important to emphasize that Site D accomplished this production with almost six fewer technicians, if the orthodontic lab technicians are not included in Site B's total assigned personnel. Site D accomplished 44% more production in terms of weighted work units than did Site B, but with 41% fewer personnel than Site B. If the orthodontic WWU are counted, Site D produced virtually the same amount of WWU with 81% fewer technicians.

The reasons for the differences in production by these two laboratories are not clear. It is evident from the data that Site D outperformed Site B in those tasks or procedures which are more heavily weighted, except for orthodontics. Site B actually represents three different clinics whereas Site D represents two clinics. The facilities at Site B are dispersed geographically over a very wide area, while those at Site D are situated more closely together. The logistical situation at Site D may allow for tighter control and more efficient management.

d. Dental Activities within Health Services Command presently are required to submit a quarterly dental service report. One item in this report concerns the amount of prosthetic laboratory work accomplished by the activity. This is reported only as a sum of weighted work units (WWU) with no specificity as to the kinds of work being done nor how much of each type.

Different kinds of dental laboratory tasks demand different skill levels on the part of the technician. Without some knowledge of what is being done, there is no accurate way to assign or hire technicians at the appropriate skill level. Pouring casts, making dies, or constructing occlusion rims for removable dentures requires less skill than does carving, casting, and applying porcelain to fixed partial dentures and crowns. Setting and arranging teeth in removable dentures also requires a considerable degree of skill and experience.

The present reporting system does not allow a manager at any level to know what is being produced at installation dental laboratories. A large number of weighted work units does not necessarily mean that the laboratory is producing a great volume of sophisticated prostheses. It may be possible that the technicians are being underutilized in terms of their skill level as compared to the technical requirements being placed upon them.

As presently structured, the prosthetic laboratory report does not give managers at HSC or higher level the information they need to make informed judgements and decisions about the assignment of resources to the RDA system or to the local laboratories. The purpose for the existence of the RDA laboratories is to provide dental services with prosthetic laboratory support which they cannot provide for themselves. The necessity for such a system is widely acknowledged and accepted within the Army Dental Care System. With the shrinking of the active Army and the attractiveness of civilian opportunities to dental laboratory technicians, the supply of highly skilled and experienced personnel is dwindling. A smaller pool of talent requires closer management. Spread thinly they cannot be as productive as they can when working in an environment which lends itself to greater efficiency.

Simply knowing where these technicians are is not enough. It is vitally important to know what they are doing and what demands are placed upon them by the clinicians they support.

The many tasks which are performed in a dental laboratory, both RDA and local, have been identified and assigned both a two-digit code number and a relative weighted work unit value based upon the time needed to accomplish the procedure and its cost. A computer program has been developed to accept this information and provide a detailed printout. The RDAs have been using this reporting system and computer program for some time now and the managers of these laboratories find it to be a very useful management tool. The RDA program will accept input from each of the Dental Activities without any need for modification. The only additional cost will be for computer time and key-punching. The program was used for this study and it has proved to be usable and useful.

In order to accurately compute the total weighted work units for their quarterly reports, the local dental activities must maintain a record of procedures accomplished. There is no standard form or guidance for doing this except for a listing of tasks and their weighted values. Although there is no documentation, it is a reasonable conclusion from observations that lack of uniformity of production records at the local level results in some misinformation. The present study indicates that the most likely error in routine reporting is an under-reporting of actual workload. One study site reported only slightly greater production in its quarterly report to HSC than it did for the one month of this study.

An alternative to the use of the computer program could also be considered. With the computer system the local installation submits the unorganized workload data and the computer does the rest. Should this not be practical, the local activities could submit a procedure-specific quarterly report which would tell HSC at a glance exactly how many units of a particular procedure were accomplished during the quarter and the number of WWUs it earned. Higher headquarters could specify certain procedures to be designated as management indicators, and have them compiled and listed separately. Also, a listing of all dental laboratory technicians assigned to or employed by the activity by grade, MOS, and their exact duty assignments during the quarter would be useful. Excess personnel could be easily identified and the utilization of assigned personnel more closely monitored. A sample format for a suggested manual quarterly summary prosthetic laboratory report is included in this report in Appendix A-10.

6. CONCLUSIONS.

a. With minor exceptions, the laboratory technicians who were assigned as such at the dental activities were appropriately utilized.

The available time spent in productive activity, i.e., at the bench, actually exceeded that reported by the RDAs, individually and on average. Military requirements and other non-laboratory duties apparently do not interfere with the technicians' primary duties to any greater degree than at the RDAs.

b. Technicians assigned to the dental laboratory were, for the most part, not delegated other duties within the clinic. Although not addressed in this study, there are a number of military dental laboratory technicians who are not assigned to the laboratory. This may be a matter for study.

c. Taken together, the installation dental laboratories were slightly more productive than the RDA system in terms of average output (in WWU) per assigned technician. The range was so wide that the mean as a "system" value should be interpreted with caution.

d. The four installation laboratories as a system produced just slightly fewer WWUs per technician hour than did the technicians in the RDA system. However, the average WWUs per technician hour at the study sites varied greatly, whereas the same values at the RDAs were very similar.

e. The lack of a standard accounting system for laboratory production at the local installation is responsible for inaccurate reports to higher headquarters. Production generally appears to be under reported.

f. The data collection mechanism employed by the RDAs was proved to be a usable and useful method for reporting laboratory procedures at the MEDDAC/MEDCEN level.

g. The implementation of an RDA-type reporting system, or a similar but manual procedure-specific reporting system, at the MEDDAC/MEDCEN level would provide HSC with additional useful management information.

h. A modified laboratory work reporting system which would provide HSC with an improved dental laboratory resource management tool has been identified by this study.

7. RECOMMENDATIONS.

a. Recommend that a procedure-specific reporting system be implemented on a routine basis at the MEDCEN/MEDDAC level.

b. Recommend that the assignment and utilization of laboratory technicians within each dental activity be monitored by higher headquarters.

c. Recommend that this study be extended and broadened to cover additional installations. The use of the RDA reporting system would greatly facilitate this effort.

8. REFERENCES.

a. DA Pamphlet 570-557. Table 557-205, Dental Lab, 26 June 1974.

b. AR 40-182, Regional Dental Activity Report.

c. AR 40-184, Dental Service Report.

TABLE 1

AVAILABLE PRODUCTIVE TIME INVOLVED IN PRODUCTIVE ACTIVITY
BY THE TECHNICIANS AT THE STUDY SITES

	SITE A	SITE B	SITE C	SITE D	CONSOLIDATED
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	3.76	18.95	11.00	11.71	45.43
NUMBER OF AVAILABLE WORK HOURS DAILY	30.08	151.60	88.00	93.68	363.44
AVERAGE DAILY TECHNICIAN HOURS PRESENT FOR DUTY	25.76	127.05	73.62	81.71	308.14
PERCENT OF AVAILABLE TIME INVOLVED IN PRODUCTIVE ACTIVITY	85.63	83.80	83.65	87.22	84.78

TABLE 2

AVAILABLE PRODUCTIVE TIME INVOLVED IN PRODUCTIVE ACTIVITY
BY THE TECHNICIANS AT THE REGIONAL DENTAL ACTIVITIES

	WALTER REED	FORT SAM HOUSTON	ALAMEDA	FORT MCPHERSON	CONSOLIDATED
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	57.00	45.81	61.05	61.95	225.81
NUMBER OF AVAILABLE WORK HOURS DAILY	456.00	366.48	488.40	495.60	1806.48
AVERAGE DAILY TECHNICIAN HOURS PRESENT FOR DUTY	367.14	293.71	362.95	384.48	1408.29
PERCENT OF AVAILABLE TIME INVOLVED IN PRODUCTIVE ACTIVITY	80.51	80.14	74.31	77.57	77.95

TABLE 3

CIVILIAN TECHNICIANS EMPLOYED AT THE STUDY SITES

	SITE A	SITE B	SITE C	SITE D
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	3.76	18.95	11.00	11.71
CIVILIAN TECHNICIANS	2	9	5	6
PERCENT CIVILIANS	53	47	45	51

TABLE 4

RDA-TYPE WORK AS A PERCENT OF TOTAL OUTPUT AT THE STUDY SITES

	SITE A	SITE B	SITE C	SITE 2
TOTAL WEIGHTED WORK UNITS	2647	15673*	9857	22609
RDA-TYPE WWUs	2060	10720	6762	15327
PERCENT RDA-TYPE WWUs	77.8	68.4	68.6	67.8
* ORTHODONTICS DEDUCTED (5590 WWU)				

TABLE 5

AVERAGE DAILY WEIGHTED WORK UNITS PER ASSIGNED TECHNICIAN AT THE STUDY SITES

	SITE A	SITE B	SITE C	SITE D	CONSOLIDATED
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	3.76	18.95	11.00	11.71	45.43
AVERAGE DAILY WWU PER ASSIGNED TECHNICIAN	23.40	37.41	29.91	64.39	41.36

TABLE 6

AVERAGE DAILY WEIGHTED WORK UNITS PER ASSIGNED TECHNICIAN AT THE REGIONAL DENTAL ACTIVITIES

	WALTER REED	FORT SAM HOUSTON	ALAMEDA	FORT MCPHERSON	CONSOLIDATED
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	57.00	45.81	61.05	61.95	225.81
AVERAGE DAILY WWU PER ASSIGNED TECHNICIAN	41.18	40.30	36.23	38.32	38.88

TABLE 7

TOTAL AVERAGE DAILY WEIGHTED WORK UNITS PRODUCED AT THE STUDY SITES

	AVERAGE DAILY WWU 30 DAY MONTH	AVERAGE DAILY WWU 21 DAY MONTH
SITE A	88	126
SITE B	709	1012
SITE C	329	469
SITE D	754	1076
CONSOLIDATED	1880	2683

TABLE 8

TOTAL AVERAGE DAILY WEIGHTED WORK UNITS PRODUCED AT
THE REGIONAL DENTAL ACTIVITIES

RDA	AVERAGE DAILY WWU 30 DAY MONTH	AVERAGE DAILY WWU 21 DAY MONTH
WALTER REED	2347	3353
FORT SAM HOUSTON	1846	2637
ALAMEDA	2212	3160
FORT MCPHERSON	2374	3392
CONSOLIDATED	8780	12542

TABLE 9

AVERAGE WEIGHTED WORK UNITS PRODUCED PER TECHNICIAN HOUR AT THE STUDY SITES

LABORATORY	AVERAGE WEIGHTED WORK UNITS
SITE A	4.89
SITE B	7.97
SITE C	6.38
SITE D	13.18
CONSOLIDATED	8.71

TABLE 10

AVERAGE WEIGHTED WORK UNITS PRODUCED PER TECHNICIAN HOUR
AT THE REGIONAL DENTAL ACTIVITIES

RDA	AVERAGE WEIGHTED WORK UNITS
WALTER REED	9.13
FORT SAM HOUSTON	8.98
ALAMEDA	8.71
FORT MCPHERSON	8.82
CONSOLIDATED	8.91

TABLE 11

THE NUMBER OF DENTAL CASTS PRODUCED AT THE STUDY SITES DURING THE TEST PERIOD

	PROCEDURE 16 POUR CAST, FIXED	PROCEDURE 36 POUR CAST, REMOVABLE
SITE A	140	90
SITE B	200	674
SITE C	587	424
SITE D	315	479

TABLE 12

TASKS PERFORMED ALMOST EXCLUSIVELY AT LOCAL LABOTATORIES.
DAYS-IN-LAB AND QUANTITY PRODUCED DURING THE STUDY PERIOD.

PROCEDURE	DESCRIPTION	DAYS-IN-LAB				NUMBER OF PROCEDURES			
		A	B	C	D	A	B	C	D
04	SOLDER, REPAIR, FIXED	1	1	1	2	1	11	4	32
17	IMPRESSION TRAY FIXED OR REMOVABLE	4	1	4	2	8	95	7	86
22	SET-UP ONLY REMOVABLE PARTIAL DENTURE	N/A	3	4	2	N/A	18	44	31
24	PROCESS ONLY, REMOVABLE PARTIAL DENTURE	N/A	2	4	2	N/A	15	56	23
27	REPAIR, REM. PART. DENT.	1	1	1	1	5	55	21	49
40	IMPRESSION TRAY COMPLETE DENTURE	1	3	4	3	2	90	25	42
41	RECORD BASE AND RIM COMPLETE DENTURE	1	3	3	3	8	102	29	59
46	RELINE, REBASE COMPLETE DENTURE	1	1	1	1	1	13	5	15
50	ARTICULATION SEMI-ADJUSTABLE	1	1	2	1	2	51	14	122

TABLE 13

DAYS-IN-LAB FOR SELECTED PROCEDURES AT THE STUDY SITES

PROCEDURE	DESCRIPTION	DAYS-IN-LAB			
		A	B	C	D
01	FULLY FABRICATED FIXED PARTIAL DENTURE	5	9	13	3
05	FULLY FABRICATED CROWNS	5	8	5	3
43	SET-UP AND WAX-UP, COMPLETE DENTURE	2	3	5	2

TABLE 14

NUMBER OF KEY INDICATOR APPLIANCES FABRICATED AT THE STUDY SITES B, C, AND D DURING THE STUDY PERIOD

PROCEDURE	DESCRIPTION	SITE B	SITE C	SITE D
01	FULLY FABRICATED FIXED PARTIAL DENTURE	64	22	29
02	CASTING ONLY FIXED PARTIAL DENTURE	12	6	80
05	FULLY FABRICATED CROWNS	39	36	98
TOTAL FIXED		115	64	207
43	SET-UP AND WAX-UP COMPLETE DENTURE	72	21	79
44	PROCESS AND FINISH COMPLETE DENTURE	68	16	70
45	FULLY FABRICATED COMPLETE DENTURE	11	5	2
TOTAL REMOVABLE		151	42	151

APPENDIX A-1

PROSTHODONTIC PROCEDURE RECORD

DENTAL LABORATORY OUTPUT STUDY
PROSTHODONTIC PROCEDURE RECORD

[1] PRESCRIPTION CODE:	[2] CLINIC CODE:

[3] DATE IN	[4] DATE OUT	[5] DESCRIBE PROCEDURE	[6] PROCEDURE CODE

AHS Form 283 (OT)
1 October 1977

APPENDIX A-2

CODING INSTRUCTIONS, PROSTHODONTIC PROCEDURE RECORD

CODING INSTRUCTIONS

PROSTHODONTIC PROCEDURE FORM

DENTAL LABORATORY TECHNICIAN
PRODUCTIVITY STUDY

The Prosthodontic Procedure Form will serve as the basic data gathering document for this study. Correct completion of this coded material is the most important element in the data gathering process. The coded data includes the specific procedure accomplished by the laboratory, the material used, and the number of units of the appliance. This data will be coded in block 6 of the form as follows:

a. The specific procedure accomplished by the laboratory will be coded using the following two digit codes:

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT VALUES
Ø1	Fully Fabricated Fixed Partial Denture	40
	Example: 3 unit porcelain fused to metal FPD Ø14Ø3Ø	
	Example: 3 unit all gold FPD Ø13Ø3Ø	
Ø2	Casting Only, Fixed Partial Denture	28
	Example: 3 unit frame work for a porcelain-to-metal FPD Ø24Ø3Ø	
Ø3	Veneer Only, Fixed Partial Denture	18
	Example: 3 unit frame returns from a metal tryin to be veneered with porcelain Ø32Ø3Ø	
Ø4	Solder/Repair (Applies only to incoming cases, not routine in-house soldering procedures)	10
	Example: A FPD returns from the clinician to have a hole in the occlusal surface soldered and a chip in the porcelain repaired Ø4ØØ2Ø	

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT VALUES
Ø5	**Fully Fabricated Crowns**	40
	Example: Porcelain-to-metal crowns for 4 maxillary incisors ØS4Ø4Ø	
Ø6	**Casting Only Crowns**	28
	Example: Casting for porcelain-to-metal crowns for 4 mandibular anteriors Ø64Ø4Ø	
Ø7	**Veneer Only Crowns**	18
	Example: 4 castings returned to be veneered with porcelain Ø72Ø4Ø	
Ø8	**Glaze**	5
	Example: 2 crowns returned to the lab after being contoured in the bisque bake stage by the clinician Ø8ØØ2Ø	
Ø9	**Partial Veneer Crowns/Onlays**	28
	This procedure covers a variety of partial veneer crowns, 3/4 crowns, 7/8 crowns, onlays, etc.	
1Ø	**Casting**	10
	This procedure is used only when an invested ring is sent from the station to laboratory for burnout and casting. One unit is counted for each item in the ring, and the total entered in Code Block 15 and 16.	
11	**Endo Posts**	25
	This procedure is used for endo posts constructed as separate units.	
12	**Precision Connector, Fixed Partial Denture**	50
	For each precision connector in a FPD, one unit will be entered in Code Blocks 15 and 16	
	Example: An 8 unit maxillary porcelain fused to metal FPD with a stress breaker distal	

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT. VALUES
12 (Con't)	to the cuspid would be entered as two line items Ø14Ø8Ø 12ØØ1Ø This value will be in addition to the regular value of the FPD	
13	Andrews Bridge To input an Andrews Bridge, two line items will be needed: one for the removable portion (Proc #13), and one for the fixed portion (Proc #Ø1, Ø2, or Ø3) as applicable Example: 3 unit Andrews Bridge with 2 abutments 13ØØ1Ø Ø16Ø3Ø (The Andrews Bar will count as 1 pontic unit)	150
14	Temporary Bridge Former Input into Code Blocks 15 and 16 for this procedure will be 1 for each former made	10
15	Perio Splint, Fixed Splints will be counted as 1 unit for each casting in the splint	40
16	Pour Cast, Fixed One unit will be counted for the cast and one unit for each die pin placed Example: Maxillary 3 unit FPD with 3 die pins placed 16ØØ4Ø	1
17	Impression Tray, Fixed or Removable Any custom tray is included in this procedure	5
18	Articulation, Adjustable One(1) unit will be counted for the entire articulation of casts on an adjustable articulator, Denar, Stewart, etc.	3

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT VALUES
19	Open	
20	Casting Only, Removable Partial Denture Self-explanatory	46
21	Casting and Set-up, Removable Partial Denture Self-explanatory	62
22	Set-up Only, Removable Partial Denture Self-explanatory	15
23	Set-up and Process, Removable Partial Denture Self-explanatory	25
24	Process Only, Removable Partial Denture It is to be understood that this procedure includes the entire finishing and polishing as well as the actual processing.	10
25	Fully Fabricated, Removable Partial Denture Self-explanatory	75
26	Transitional, Removable Partial Denture This procedure includes all resin RPD's regardless of whether they have clasps or not	20
27	Repair, Removable Partial Denture One(1) unit will be counted for each partial repair Example: A repair consisting of the addition of a wrought clasp and an additional tooth would be considered two repair units 27002Ø	12
28	Reline & Rebase, Removable Partial Denture Self-explanatory	10
29	Precision Attachment, Removable Partial Denture Self-explanatory	275
30	Swing-Lock, Removable Partial Denture Self-explanatory	225
31	Stressbreaker, Removable Partial Denture Self-explanatory	180

PROCEDURE NUMBER	PROCEDURE	WW'/UNIT VALUES
32	Bar-Clip, Removable Partial Denture Self-explanatory	120
33	Surgical Splint This procedure includes cast labial arch bars and lingual cast splints. Other more complex surgical aids are to be entered as maxillo-facial appliances Procedure #74	50
34	Altered Cast Tray This procedure will be encoded as one(1) unit for each partial frame with an altered cast tray or trays attached rather than for each edentulous tray area. Example: A mandibular bilateral distal extension with altered cast trays 34¢#1#	5
35	Pour, Altered Cast One(1) unit for the complete cast rather than for each edentulous area	5
36	Pour Cast, Preliminary, Master or Opposing Self-explanatory	1
37	Articulation, Simple This procedure will be encoded as one(1) unit for each case articulated on a simple or laboratory articulator. This procedure is not intended for use at the RDAs.	1
*38-39	Open	
4#	Impression Tray, Complete Denture Self-explanatory	5
41	Record Base & Rim, Complete Denture Self-explanatory	5
42	Casting Base, Complete Denture Self-explanatory	25
43	Set-up & Wax-up, Complete Denture Self-explanatory	20

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT VALUES
44	Process & Finish, Complete Denture This procedure will include the final waxing that is necessary before processing.	30
45	Fully Fabricated, Complete Denture Self-explanatory	48
46	Reline/Rebase, Complete Denture Self-explanatory	20
47	Repair, Complete Denture Self-explanatory	8
48	Surgical Template Self-explanatory	7
49	Box & Pour Impression One(1) unit for each impression	5
5Ø	Articulation, Semi-Adjustable One(1) unit will be encoded for each complete articulation on a semi-adjustable articulator. Example: Hanau, Whipmix, etc.	2
*51-59	Open	
6Ø	Orthodontic Tooth Positioner	30
61	Diagnostic Set-up	30
62	Orthodontic Study Models	10
63	Orthodontic Appliance This will encompass any appliance, banded or removable	50
*64-69	Open	
7Ø	Mouthguard, Flexible Self-explanatory	5
71	Mouthguard, Rigid To include such appliances as the SVED bite plane	7

PROCEDURE NUMBER	PROCEDURE	WWU/UNIT VALUES
72	Demonstration Model, Resin Self-explanatory	40
73	Demonstration Model, Stone	2
**74	Maxillo-facial Prostheses	10
	For any max-fac appliance an estimation of the applicable WWU's will be made and entered in the unit columns on the basis of 10 WWU's for each unit Example: A vitallium condylar implant estimated at 300 WWU's 747300	
**75	Special Projects	10
	This procedure also requires the estimation of the total number of work units and their entry on the basis of 10 WWU's for each unit. This procedure covers all miscellaneous research and education projects, as well as those prosthodontic items not covered by any other procedure number	

* Reserved for future use
** The estimations for the WWU's for Procedures 74 and 75 should be based on time, material and expertise in relation to those required for a fully fabricated crown or removable partial denture

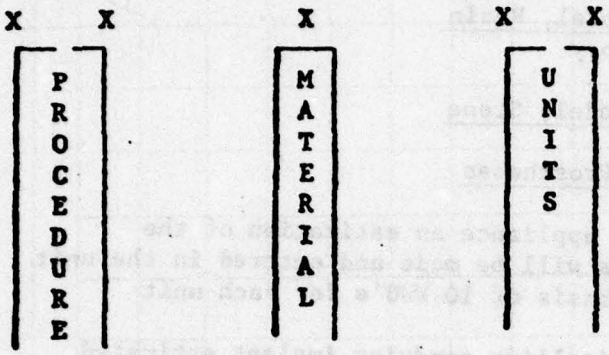
b. Next code the material used. This will be a one digit figure using the code below:

MATERIAL

0	Open/no material code
1	Resin
2	Porcelain
3	Regular gold (I-IV)
4	White Ceramic Gold
5	Yellow Ceramic Gold
6	Combination Metal
7	Non-Precious Metal
8	Open
9	Open

c. Code the number of units of the appliance identified in paragraph a. above. This is the most critical area since the weighted work units are compiled from this entry. This code requires a two digit number. The five digit code in block 38 of the DA 2868 will now appear

as follows:



Care will be taken to insure that blocks 10, Date Initiated, and block 11, Date Completed, are completed as this data is required for later posting. For the purpose of this survey all procedures that are completed during the survey period will be coded and recorded even though they may have been started prior to the period.

APPENDIX A-3

CODING FORM, CARD A. KEYPUNCH WORK SHEET

PRODUCTIVITY OF USAMEDD LABORATORY TECHNICIAN - DAILY WORKSHEET

DATE						RDA	STATION CODES				PROCED URE		MAT	UNITS		ARCH	TIME IN LAB		RESERVED FOR FUTURE USE							CD TY PE
YEAR		MO		DAY																						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	30
																LEAVE BLANK										A

47

APPENDIX A-4

DAILY LABORATORY TECHNICIAN ROSTER

DAILY LABORATORY TECHNICIAN ROSTER

[1] DATE: _____ [2] FACILITY: _____ [3] LAB: _____

[4] IN COLUMN 5 BELOW INCLUDE ALL MILITARY PERSONNEL WITH MOS 42D OR 42F AND ALL CIVILIANS WITH GS-683 JOB SERIES.

[5] TECHNICIAN IDENTIFIER	[6] LENGTH OF EACH ABSENCE (15 MIN+)	[7] TOTAL HOURS PRESENT FOR DUTY

[8] IN THE SPACE BELOW LIST ALL PERSONS IN MOS 42D AND 42F, AND GS-683 CIVILIANS ASSIGNED TO THE DENTAL SERVICE WHOSE PRIMARY DUTY IS OTHER THAN DENTAL LABORATORY TECHNICIAN.

[9] TECHNICIAN IDENTIFIER	[10] WHERE ASSIGNED	[11] TOTAL HOURS WORKED IN LAB (IF ANY)

APPENDIX A-5

CODING INSTRUCTIONS, CARD B. TECHNICIANS PRESENT FOR DUTY

CODING INSTRUCTIONS
CARD B

TECHNICIANS PRESENT FOR DUTY
DENTAL LABORATORY TECHNICIAN PRODUCTIVITY STUDY

1. Coding worksheet B provides personnel assignment and utilization data. The card will be completed on a daily basis by the Dental Clinic NCO.

2. Coding instructions are as follow:

a. DATE (1-6). Follow same procedure as block 1 through 6 on Card A.

b. STATION INPUT (7). Pre-completed.

c. TOTAL ASSIGNED (8-11). Leave blank.

d. TECHNICIANS ASSIGNED (12-15). This will include all military personnel with MOS 42D or 42F, and all civilians with the GS-683 job series assigned on that particular day, even though they may work in administration, supply, or elsewhere.

e. TECHNICIAN HOURS PRESENT FOR DUTY (16-19). The total direct hours available for work by the number of technicians entered in blocks 12-15 for that particular day will be entered. Direct hours are defined as productive labor related to a service performed or a unit of work.

(1) Direct hours DO NOT include:

(a) Annual leave

(b) TDY

(c) Sick leave

(d) Excused absence

(e) Military training

(f) Personnel processing

(g) Formal technical training

(h) Administrative meetings

(i) Medical and Dental appointments

(j) Absences of more than 15 minutes for any reason.

(2) Direct hours DO include:

(a) Breaks

(b) Absences of less than 15 minutes

(3) It is intended that this data accurately reflect those actual hours available to perform dental laboratory procedures.

f. NOT USED (20-23). Leave these columns blank.

g. CARD NUMBER (24-25). Indicates the number of working days in the month by numbering sequentially for each production day.

h. NOT USED (26-29). Leave these columns blank.

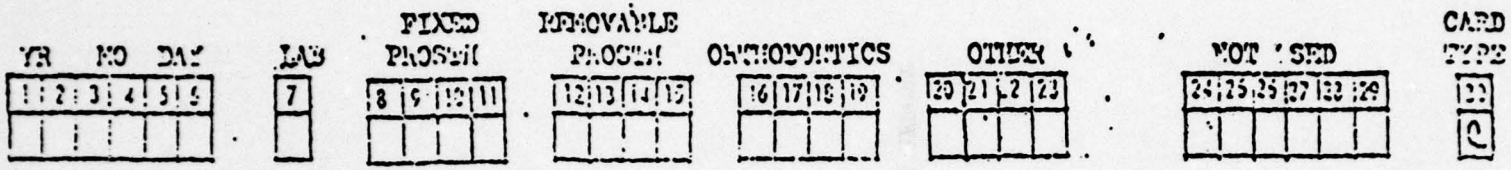
i. CARD TYPE (30). Pre-completed, will always be B.

APPENDIX A-6

CODING FORM, CARD C. CASES REMAINING

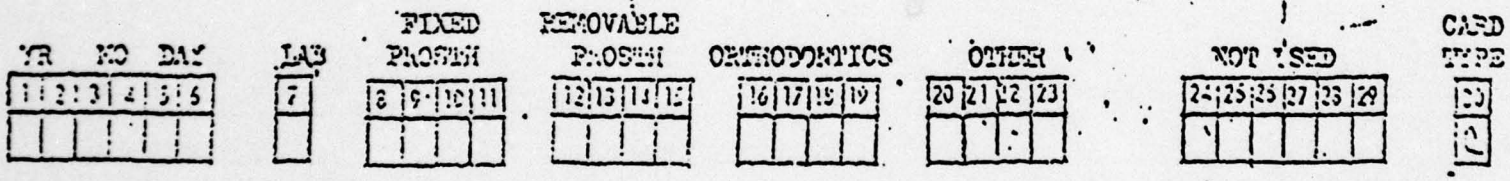
PRODUCTIVITY OF USAMEDD LABORATORY TECHNICIANS

CASES REMAINING



Complete at the close of business the day preceding the first day of the sample period and mail with your first day's submission.

CASES REMAINING



Complete at the close of the last day of the test period and mail with the last day's submission.

APPENDIX A-7

CONSOLIDATED PRODUCTION ANALYSIS REPORT

PREPARED 01/12/78 CONSOLIDATED PRODUCTION ANALYSIS REPORT PCN 05DLS1

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

US ARMY HEALTH SERVICES COMMAND

BY WEIGHTED WORK UNITS

	PROCEDURES	TOTAL	PERCENT
FIXED PROSTHODONTICS	01 THRU 19	25,599	45.41
PARTIAL DENTURES	01 THRU 03	10,271	18.22
CROWNS	05 THRU 07	8,940	15.86
REMOVABLE PROSTHODONTICS	20 THRU 59	23,411	41.53
PARTIAL DENTURES	20 THRU 39	9,904	17.57
COMPLETE DENTURES	40 THRU 59	13,507	23.96
ORTHODONTICS	60 THRU 69	6,371	11.30
OTHER/MISC	70 THRU 75	990	1.76
OVERALL FOR THIS PERIOD		56,376	

BY MAJOR DENTAL PROSTHESES

	PROCEDURES	TOTAL UNITS/APPLIANCES
FIXED PROSTHODONTICS		
PARTIAL DENTURES	01 AND 02	60
CROWNS	05 AND 06	213 UNITS
REMOVABLE PROSTHODONTICS		
PARTIAL DENTURES	20 AND 25	1
COMPLETE DENTURES	43 AND 45	197
ORTHODONTICS	60 THRU 69	165
MAXILLOFACIAL PROSTHESES	74	0

CASES ON HAND LAST DAY OF MONTH

FIXED PROSTHESES/UNITS 979 REMOVABLE PROSTHESES 990 ORTHODONTICS 92 OTHER/MISC 21

PREPARED 01/12/78 CONSOLIDATED PRODUCTION ANALYSIS REPORT / PCN 85DLS1

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

US ARMY HEALTH SERVICES COMMAND

MONTHLY AVERAGE OF TIME IN LAB

PROCEDURE	** TITLE OF PROCEDURE **	AVERAGE DAYS
01	FULLY FABRICATED FIXED PARTIAL DENTURE	8
05	FULLY FABRICATED CROWNS	5
20	CASTING ONLY REMOVABLE PARTIAL DENTURE	0
25	FULLY FABRICATED REMOVABLE PARTIAL DENTURE	5
43	SET-UP AND WAX-UP COMPLETE DENTURE	3

AVERAGE DAILY WEIGHTED WORK UNITS

TOTAL WEIGHTED WORK UNITS FOR THIS MONTH	TOTAL DAYS THIS MONTH	AVERAGE DAILY WEIGHTED WORK UNITS
56,376	30	1,879

BY WEIGHTED WORK UNITS BY SERVICE

• TOTAL •	PERCENT	• TOTAL •	PERCENT	• TOTAL •	PERCENT	• TOTAL •	PERCENT
ARMY 56,376	100.00	NAVY 0	0.00	AIR FORCE 0	0.00	US PHS 0	0.00

BY MAJOR DENTAL PROSTHESES BY SERVICE

	PROCEDURES	TOTAL APPLIANCES/ OR UNITS ARMY	TOTAL APPLIANCES/ OR UNITS NAVY	TOTAL APPLIANCES/ OR UNITS AIR FORCE	TOTAL APPLIANCES/ OR UNITS US PHS
FIXED PROSTHODONTICS					
PARTIAL DENTURES	01 AND 02	68	0	0	0
CROWNS	05 AND 06	213 UNITS	0 UNITS	0 UNITS	0 UNITS
REMOVABLE PROSTHODONTICS					
PARTIAL DENTURES	20 AND 25	1 UNITS	0 UNITS	0 UNITS	0 UNITS
COMPLETE DENTURES	43 AND 45	197 UNITS	0 UNITS	0 UNITS	0 UNITS

PREPARED 01/12/78 CONSOLIDATED PRODUCTION ANALYSIS REPORT RCN 05DLS1

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

US ARMY HEALTH SERVICES COMMAND

AVERAGE DAILY STRENGTH AND PRODUCTIVITY DATA

AVERAGE DAILY TOTAL ASSIGNED STRENGTH	45.43
AVERAGE DAILY NUMBER OF TECHNICIANS ASSIGNED	45.43
AVERAGE DAILY TECHNICIAN HOURS PRESENT FOR DUTY	308.14
AVERAGE DAILY WEIGHTED WORK UNITS PER ASSIGNED INDIVIDUAL	41.36
AVERAGE DAILY WEIGHTED WORK UNITS PER ASSIGNED TECHNICIAN	41.36
AVERAGE WEIGHTED WORK UNITS PER TECHNICIAN HOUR	6.71

APPENDIX A-8

PRODUCTION ANALYSIS REPORT

PREPARED 01/12/78 PROCEDURE REPORT PCN 06DLS1

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

WILLIAM BEAUMONT AMC

PROCEDURE	TITLE OF PROCEDURE	TYPE OF MATERIAL		UNITS	APPLICATIONS	W.H.U.	DAYS
01	FULLY FABRICATED FIXED PARTIAL DENTURE	REGULAR GOLD (I-IV)		3	4	480	5
				4	1	160	2
			TOTAL		5	640	4
		WHITE CERAMIC GOLD		1	1	40	2
				3	2	240	2
				6	1	240	2
			TOTAL		4	520	2
			PROCEDURE TOTAL		9	1,160	3
02	CASTING ONLY FIXED PARTIAL DENTURE	REGULAR GOLD (I-IV)		3	2	168	3
			TOTAL		2	168	3
		WHITE CERAMIC GOLD		3	4	336	2
				4	2	224	4
				6	4	672	3
				8	1	224	2
				9	1	252	1
				13	1	364	2
			TOTAL		13	2,072	3
			PROCEDURE TOTAL		15	2,240	3
03	VENEER ONLY FIXED PARTIAL DENTURE		TOTAL	52		936	3
04	SOLDER/REPAIR		TOTAL	32		320	2
05	FULLY FABRICATED CROWNS	PORCELAIN	TOTAL	6		240	2
		REGULAR GOLD (I-IV)	TOTAL	41		1,640	3
		WHITE CERAMIC GOLD	TOTAL	51		2,040	3
			PROCEDURE TOTAL	98		3,920	3
06	CASTINGS ONLY CROWNS	REGULAR GOLD (I-IV)	TOTAL	1		28	4
		WHITE CERAMIC GOLD	TOTAL	12		336	3
			PROCEDURE TOTAL	13		364	3
07	VENEER ONLY CROWNS		TOTAL	30		540	1

PREPARED 01/12/78 PROCEDURE REPORT PCN 86DLS1

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

WILLIAM BEAUMONT AMC

PROCEDURE	TITLE OF PROCEDURE	TYPE OF MATERIAL		UNITS	APPLICATIONS	M.M.U.	DAYS
08	GLAZE		TOTAL	94		470	1
09	INLAYS		TOTAL	5		140	5
10	CASTINGS		TOTAL	11		110	1
11	PACO POSTS		TOTAL	39		975	3
14	TEMPORARY BRIDGE FORMER		TOTAL	3		30	1
16	POUR CAST, FIXED	MATERIAL UNSPECIFIED	TOTAL	315		315	1
			PROCEDURE TOTAL	315		315	1
17	IMPRESSION TRAY, FIXED OR REMOVABLE	MATERIAL UNSPECIFIED	TOTAL	22		110	3
		RESIN	TOTAL	64		320	1
			PROCEDURE TOTAL	86		430	2
18	ARTICULATION, ADJUSTABLE	MATERIAL UNSPECIFIED	TOTAL	1		3	1
			PROCEDURE TOTAL	1		3	1
22	SET-UP ONLY REMOVABLE PARTIAL DENTURES		TOTAL	31		465	2
23	SET-UP AND PROCESS REMOVABLE PARTIAL DEN		TOTAL	15		375	2
24	PROCESS ONLY REMOVABLE PARTIAL DENTURE		TOTAL	23		230	2
26	TRANSITIONAL PARTIAL DENTURE		TOTAL	54		1,080	2
27	REPAIR REMOVABLE PARTIAL DENTURE		TOTAL	49		584	1
28	RELINE AND REBASE REMOVABLE PARTIAL DEN		TOTAL	1		10	2
29	SURGICAL SPLINT		TOTAL	11		550	2
34	ALTERED CAST TRAY		TOTAL	9		45	1
35	POUR, ALTERED CAST		TOTAL	11		55	1
36	POUR CAST, REMOVABLE		TOTAL	479		479	1

PROCESSED 01/12/78 PROCEDURE REPORT PCN 86DL51

POST DENTAL LABORATORY REPORTING PERIOD 01 NOV 77 THRU 30 NOV 77

WILLIAM BEAUMONT AMC

PROCEDURE	TITLE OF PROCEDURE	TYPE OF MATERIAL	UNITS	APPLICATIONS	M.M.U.	DAYS
37	ARTICULATION, SIMPLE	TOTAL	66		66	1
40	IMPRESSION TRAY COMPLETE DENTURE	TOTAL	42		210	3
41	RECORD BASE AND RIM COMPLETE DENTURE	TOTAL	59		295	3
42	SET-UP AND WAX-UP COMPLETE DENTURE	TOTAL	79		1,580	2
44	PROCESS AND FINISH COMPLETE DENTURE	TOTAL	70		2,100	2
45	FULLY FABRICATED COMPLETE DENTURE	TOTAL	2		96	5
46	RELINE/REBASE COMPLETE DENTURE	TOTAL	15		300	1
47	REPAIR COMPLETE DENTURE	TOTAL	9		72	1
48	SURGICAL TEMPLATE	TOTAL	3		21	3
49	BOX AND POUR IMPRESSION	TOTAL	111		555	1
50	ARTICULATOR, SEMI-ADJUSTABLE	TOTAL	122		244	1
60	ORTHODONTIC TOOTH POSITIONER	TOTAL	1		30	1
61	ORTHODONTIC APPLIANCE	TOTAL	12		600	2
70	MOUTHGUARD FLEXIBLE	TOTAL	4		20	1
71	MOUTHGUARD RIGID	TOTAL	4		24	2
73	DEMONSTRATION MODELS STONE	TOTAL	6		12	1
75	SPECIAL PROJECTS		1	2	20	1
			2	7	140	1
			3	2	60	1
			9	1	90	1
			24	1	240	1
		PROCEDURE TOTAL		13	550	1
	MISCELLANEOUS DATA TOTAL 0	GRAND TOTAL	2,067	37	22,609	

APPENDIX A-9

PROCEDURE REPORT

DATE PREPARED 01/12/78 FT RUCKER *PCN 33DLS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.M.U.
FT. RUCKER, AL			
DC#2	16 POUR CAST, FIXED	4	8
	17 IMPRESSION TRAY,FIXED OR REM	3	15
	SUBTOTAL		23
EXAM	01 FULLY FABRICATED FIXED PR DEN	8	1,000
	04 SOLDER/REPAIR	1	10
	05 FULLY FABRICATED CROWNS	18 UNITS	720
	08 GLAZE	3	20
	16 POUR CAST, FIXED	40	132
	17 IMPRESSION TRAY,FIXED OR REM	3	25
	23 SET-UP AND PROCESS REM PR DEN	2	50
	26 TRANSITIONAL PARTIAL DENTURE	2	40
	27 REPAIR REMOVABLE PARTIAL DEN	5	60
	28 RELINE AND REBASE REM PR DEN	1	10
	36 POUR CAST, REMOVABLE	9	90
	37 ARTICULATION, SIMPLE	13	17
	40 IMPRESSION TRAY COMPLETE DEN	1	10
	41 RECORD BASE AND RIM COMPL DEN	4	40
	43 SET-UP AND WAX-UP COMPL DEN	4	140
	44 PROCESS AND FINISH COMPL DEN	3	150
	46 RELINE/REBASE COMPLETE DENTURE	1	20
	47 REPAIR COMPLETE DENTURE	5	40
	50 ARTICULATION, SEMI-ADJUSTABLE	2	4

DATE PREPARED 01/12/78 FT RUCKER PCN 62CL51

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCCOURE	TOTAL PROCEDURES	M.H.U.
	62 ORTHODONTIC STUDY MODELS	1	20
	70 MOUTHGUARD FLEXIBLE	1	5
	71 MOUTHGUARD RIGID	3	21
	SUBTOTAL		2,624
	STATION TOTAL		2,647
	RDA TOTAL		2,647

DATE PREPARED 01/12/78 FT BENNING PCN 03DLS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.W.U.
FT. BENNING, GA			
BERNHEIM	01 FULLY FABRICATED FIXED PR DEN	2	360
	02 CASTING ONLY FIXED PR DEN	2	196
	04 SOLDER/REPAIR	1	20
	05 FULLY FABRICATED CROWNS	19 UNITS	760
	08 GLAZE	2	45
	09 INLAYS	3	84
	11 ENDO POSTS	3	75
	16 POUR CAST, FIXED	26	59
	17 IMPRESSION TRAY,FIXED OR REM	4	160
	22 SET-UP ONLY REMOVABLE PR DEN	2	30
	23 SET-UP AND PROCESS REM PR DEN	9	250
	24 PROCESS ONLY REMOVABLE PR DEN	1	10
	25 FULLY FABRICATED REM PR DEN	1	75
	26 TRANSITIONAL PARTIAL DENTURE	5	180
	27 REPAIR REMOVABLE PARTIAL DEN	5	72
	36 POUR CAST, REMOVABLE	16	246
	37 ARTICULATION, SIMPLE	23	37
	40 IMPRESSION TRAY COMPLETE DEN	2	235
	41 RECORD BASE AND RIM COMPL DEN	14	125
	43 SET-UP AND WAX-UP COMPL DEN	7	180
	44 PROCESS AND FINISH COMPL DEN	5	180
	45 FULLY FABRICATED COMPLETE DEN	1	48

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DATE PREPARED 01/12/78 — FT GENNING — PCN 03DLS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES		W.M.U.
	46 RELINE/REBASE COMPLETE DENTURE	5		100
	47 REPAIR COMPLETE DENTURE	2		16
	48 SURGICAL TEMPLATE	2		21
	49 BOX AND POUR IMPRESSION	13		165
	50 ARTICULATION, SEMI-ADJUSTABLE	12		24
	70 MOUTHGUARD FLEXIBLE	5		40
	75 SPECIAL PROJECTS	1		10
	SUBTOTAL			3,723
DC02	26 TRANSITIONAL PARTIAL DENTURE	1		20
	27 REPAIR REMOVABLE PARTIAL DEN	3		36
	36 POUR CAST, REMOVABLE	6		96
	61 DIAGNOSTIC SET-UP	1		30
	62 ORTHODONTIC STUDY MODELS	9		690
	63 ORTHODONTIC APPLIANCE	59		4,850
	70 MOUTHGUARD FLEXIBLE	1		5
	71 MOUTHGUARD RIGID	1		7
	SUBTOTAL			5,732
DC03(KELLY HILL)	81 FULLY FABRICATED FIXED PR DEN	14		2,268
	82 CASTING ONLY FIXED PR DEN	1		140
	83 VENEER ONLY FIXED PR DEN	2		234
	84 SOLDER/REPAIR	7		90
	85 FULLY FABRICATED CROWNS	20	UNITS	800
	87 VENEER ONLY CROWNS	1	UNITS	18

DATE PREPARED 01/12/78

FT BENNING
STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

PCN 030LS1

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.M.U.
11	ENCG POSTS	19	475
14	TEMPORARY BRIDGE FORMER	4	110
16	POUR CAST, FIXED	26	104
17	IMPRESSION TRAY,FIXED OR REM	5	130
22	SET-UP ONLY REMOVABLE PR DEN	3	75
23	SET-UP AND PROCESS REM PR DEN	12	350
24	PROCESS ONLY REMOVABLE PR DEN	3	50
26	TRANSITIONAL PARTIAL DENTURE	8	160
27	REPAIR REMOVABLE PARTIAL DEN	9	144
28	RELINE AND REBASE REM PR DEN	1	16
34	ALTERED CAST TRAY	2	15
35	POUR, ALTERED CAST	2	18
36	POUR CAST, REMOVABLE	15	145
37	ARTICULATION, SIMPLE	27	33
40	IMPRESSION TRAY COMPLETE DEN	12	145
41	RECORD BASE AND RIM COMPL DEN	15	160
43	SET-UP AND WAX-UP COMPL DEN	7	440
44	PROCESS AND FINISH COMPL DEN	4	480
46	RELINE/REBASE COMPLETE DENTURE	1	20
47	REPAIR COMPLETE DENTURE	5	40
49	BOX AND POUR IMPRESSION	11	140
50	ARTICULATION, SEMI-ADJUSTABLE	13	42
70	MOUTHGUARD FLEXIBLE	5	35

DATE PREPARED 01/12/78 FT BENNING PCN 030LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	M.M.U.
	71 MOUTHGUARD RIGID	1	7
	73 DEMONSTRATION MODELS STONE	1	4
	SUBTOTAL		6,806
DC04	11 ENCO POSTS	6	200
	16 POUR CAST, FIXED	12	37
	17 IMPRESSION TRAY,FIXED OR REM	3	198
	22 SET-UP ONLY REMOVABLE PR DEN	8	165
	23 SET-UP AND PROCESS REM PR DEN	5	150
	24 PROCESS ONLY REMOVABLE PR DEN	6	90
	26 TRANSITIONAL PARTIAL DENTURE	7	168
	27 REPAIR REMOVABLE PARTIAL DEN	19	488
	28 RELINE AND REBASE REM PR DEN	3	38
	36 POUR CAST, REMOVABLE	6	189
	37 ARTICULATOR, SIMPLE	8	9
	40 IMPRESSION TRAY COMPLETE DEN	9	76
	41 RECORD BASE AND RIM COMPL DEN	22	225
	43 SET-UP AND WAX-UP COMPL DEN	24	820
	44 PROCESS AND FINISH COMPL DEN	28	1,388
	45 FULLY FABRICATED COMPLETE DEN	6	468
	46 RELINE/REBASE COMPLETE DENTURE	6	148
	47 REPAIR COMPLETE DENTURE	13	136
	48 SURGICAL TEMPLATE	1	7
	49 BOX AND POUR IMPRESSION	5	38

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DATE PREPARED 01/12/78 FT CENNING PCN 030LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	M.H.U.
	50 ARTICULATION, SEMI-ADJUSTABLE	14	36
	63 ORTHODONTIC APPLIANCE	1	50
	SUBTOTAL		5,802
	STATION TOTAL		21,263
	RDA TOTAL		21,263

DATE PREPARED 01/12/78 — FT CARSON — PCN 030LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES		M.M.U.
FT. CARSON, CO				
FT. CARSON, CO. DENTAL CLINIC #1	01 FULLY FABRICATED FIXED PR DEN	3		360
	02 CASTING ONLY FIXED PR DEN	1		56
	03 VENEER ONLY FIXED PR DEN	4		126
	04 SOLDER/REPAIR	2		40
	05 FULLY FABRICATED CROWNS	3	UNITS	120
	06 CASTINGS ONLY CROWNS	8	UNITS	224
	07 VENEER ONLY CROWNS	3	UNITS	54
	10 CASTINGS	7		138
	11 ENDO POSTS	4		100
	16 POUR CAST, FIXED	51		152
	17 IMPRESSION TRAY,FIXED OR REM	34		485
	22 SET-UP ONLY REMOVABLE PR DEN	17		315
	24 PROCESS ONLY REMOVABLE PR DEN	20		240
	26 TRANSITIONAL PARTIAL DENTURE	9		260
	27 REPAIR REMOVABLE PARTIAL DEN	7		84
	28 RELINE AND REBASE REM PR DEN	1		18
	34 ALTERED CAST TRAY	2		18
	35 POUR, ALTERED CAST	1		18
	36 POUR CAST, REMOVABLE	23		286
	37 ARTICULATION, SIMPLE	8		8
	40 IMPRESSION TRAY COMPLETE DEN	9		95
	41 RECORD BASE AND RIM COMPL DEN	10		85

DATE PREPARED 01/12/78 FT CARSON PCN 330LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	M.H.U.
	43 SET-UP AND WAX-UP COMPL DEN	12	300
	44 PROCESS AND FINISH COMPL DEN	12	450
	45 FULLY FABRICATED COMPLETE DEN	3	240
	46 RELINE/REBASE COMPLETE DENTURE	5	100
	47 REPAIR COMPLETE DENTURE	17	144
	48 SURGICAL TEMPLATE	5	49
	50 ARTICULATION, SEMI-ADJUSTABLE	13	20
	70 MOUTHGUARD FLEXIBLE	2	10
	71 MOUTHGUARD RIGID	1	7
	75 SPECIAL PROJECTS	7	190
	SUBTOTAL		4,788
FT. CARSON, CO. DENTAL CLINIC #3	01 FULLY FABRICATED FIXED PR DEN	4	520
	02 CASTING ONLY FIXED PR DEN	1	112
	03 VENEER ONLY FIXED PR DEN	9	630
	05 FULLY FABRICATED CROWNS	33 UNITS	1,320
	06 CASTINGS ONLY CROWNS	1 UNITS	28
	07 VENEER ONLY CROWNS	4 UNITS	72
	11 ENDO POSTS	8	225
	16 POUR CAST, FIXED	68	435
	17 IMPRESSION TRAY, FIXED OR REM	4	40
	22 SET-UP ONLY REMOVABLE PR DEN	17	345
	24 PROCESS ONLY REMOVABLE PR DEN	17	320
	26 TRANSITIONAL PARTIAL DENTURE	13	260

DATE PREPARED 01/12/78 FT CARSON PCN 030LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.H.U.
	27 REPAIR REMOVABLE PARTIAL DEN	13	168
	33 SURGICAL SPLINT	2	100
	34 ALTERED CAST TRAY	1	5
	35 POUR, ALTERED CAST	1	5
	36 POUR CAST, REMOVABLE	15	138
	37 ARTICULATION, SIMPLE	16	27
	40 IMPRESSION TRAY COMPLETE DEN	6	30
	41 RECORD BASE AND RIM COMPL DEN	8	60
	43 SET-UP AND WAX-UP COMPL DEN	5	120
	44 PROCESS AND FINISH COMPL DEN	1	30
	48 SURGICAL TEMPLATE	2	14
	50 ARTICULATION, SEMI-ADJUSTABLE	4	8
	63 ORTHODONTIC APPLIANCE	2	100
	70 MOUTHGUARD FLEXIBLE	8	45
	SUBTOTAL		5,157
	STATION TOTAL		9,857
	ROA TOTAL		9,857

DATE PREPARED 01/12/78 WILLIAM BEAUMONT AMC PCN 03DLS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.H.U.
WM BEAUMONT ARMY MEDICAL CENTER, TX			
46AMC, TX, HOSPITAL DENTAL CLINIC	01 FULLY FABRICATED FIXED PR DEN	8	928
	02 CASTING ONLY FIXED PR DEN	6	924
	03 VENEER ONLY FIXED PR DEN	4	432
	04 SOLDER/REPAIR	13	170
	05 FULLY FABRICATED CROWNS	61 UNITS	2,440
	06 CASTINGS ONLY CROWNS	13 UNITS	364
	07 VENEER ONLY CROWNS	14 UNITS	252
	08 GLAZE	16	245
	10 CASTINGS	3	48
	11 ENDO POSTS	14	850
	14 TEMPORARY BRIDGE FORMER	3	33
	16 POUR CAST, FIXED	71	233
	17 IMPRESSION TRAY,FIXED OR REM	15	390
	22 SET-UP ONLY REMOVABLE PR DEN	14	255
	23 SET-UP AND PROCESS REM PR DEN	7	225
	24 PROCESS ONLY REMOVABLE PR DEN	10	120
	26 TRANSITIONAL PARTIAL DENTURE	17	480
	27 REPAIR REMOVABLE PARTIAL DEN	13	228
	28 RELINE AND REBASE REM PR DEN	1	10
	33 SURGICAL SPLINT	8	550
	34 ALTERED CAST TRAY	3	25
	35 POUR, ALTERED CAST	6	35

DATE PREPARED 01/12/78 — WILLIAM BEAUMONT AMC — PCN 03DLS1

STATION REPORT FOR PERIOD 01 DEC 77 THRU 31 DEC 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	M.M.U.
	36 POUR CAST, REMOVABLE	13	199
	37 ARTICULATION, SIMPLE	30	51
	40 IMPRESSION TRAY COMPLETE DEN	8	190
	41 RECORD BASE AND RIM COMPL DEN	19	285
	43 SET-UP AND WAX-UP COMPL DEN	31	1,140
	44 PROCESS AND FINISH COMPL DEN	23	1,260
	45 FULLY FABRICATED COMPLETE DEN	2	96
	46 RELINE/REBASE COMPLETE DENTURE	13	280
	47 REPAIR COMPLETE DENTURE	5	64
	48 SURGICAL TEMPLATE	3	21
	49 BOX AND POUR IMPRESSION	10	165
	50 ARTICULATION, SEMI-ADJUSTABLE	29	132
	60 ORTHODONTIC TOOTH POSITIONER	1	30
	63 ORTHODONTIC APPLIANCE	5	250
	70 MOUTHGUARD FLEXIBLE	2	10
	71 MOUTHGUARD RIGID	2	14
	73 DEMONSTRATION MODELS STONE	3	12
	75 SPECIAL PROJECTS	18	410
	SUBTOTAL		13,827
WBAMC, TX, DENTAL CLINIC #1	01 FULLY FABRICATED FIXED PR DEN	1	240
	02 CASTING ONLY FIXED PR DEN	9	1,316
	03 VENEER ONLY FIXED PR DEN	6	564
	04 SOLDER/REPAIR	10	150

DATE PREPARED 01/12/78 — WILLIAM BEAUMONT AMC — PCN 03DLS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE	TOTAL PROCEDURES	W.H.U.
	05 FULLY FABRICATED CROWNS	34 UNITS	1,360
	07 VENEER ONLY CROWNS	16 UNITS	288
	08 GLAZE	13	225
	09 INLAYS	4	112
	10 CASTINGS	3	40
	11 ENDO POSTS	4	125
	16 POUR CAST, FIXED	29	68
	17 IMPRESSION TRAY,FIXED OR REM	3	28
	18 ARTICULATION, ADJUSTABLE	1	3
	22 SET-UP ONLY REMOVABLE PR DEN	11	210
	23 SET-UP AND PROCESS REM PR DEN	4	150
	24 PROCESS ONLY REMOVABLE PR DEN	3	110
	26 TRANSITIONAL PARTIAL DENTURE	13	560
	27 REPAIR REMOVABLE PARTIAL DEN	13	360
	34 ALTERED CAST TRAY	2	15
	35 POUR, ALTERED CAST	2	15
	36 POUR CAST, REMOVABLE	11	254
	37 ARTICULATION, SIMPLE	5	11
	40 IMPRESSION TRAY COMPLETE DEN	2	15
	43 SET-UP AND WAX-UP COMPL DEN	12	448
	44 PROCESS AND FINISH COMPL DEN	17	840
	46 RELINE/REBASE COMPLETE DENTURE	1	20
	47 REPAIR COMPLETE DENTURE	1	8

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DATE PREPARED 01/12/78 — WILLIAM BEAUMONT AMC — PCN 030LS1

STATION REPORT FOR PERIOD 01 NOV 77 THRU 30 NOV 77

STATION NAME	PROCEDURE		TOTAL PROCEDURES	W.W.U.
	49	BOX AND POUR IMPRESSION	8	380
	50	ARTICULATION, SEMI-ADJUSTABLE	25	112
	63	ORTHODONTIC APPLIANCE	6	350
	70	MOUTHGUARD FLEXIBLE	2	10
	71	MOUTHGUARD RIGID	2	14
	75	SPECIAL PROJECTS	3	140
		SUBTOTAL		8,465
WOAMC, TX, DENTAL CLINIC #3	05	FULLY FABRICATED CROWNS	3 UNITS	120
	09	INLAYS	1	28
	10	CASTINGS	2	30
	16	POUR CAST, FIXED	6	14
	17	IMPRESSION TRAY,FIXED OR REM	3	20
	26	TRANSITIONAL PARTIAL DENTURE	2	40
	34	ALTERED CAST TRAY	1	5
	35	POUR, ALTERED CAST	1	5
	36	POUR CAST, REMOVABLE	2	26
	37	ARTICULATION, SIMPLE	3	4
	40	IMPRESSION TRAY COMPLETE DEN	1	5
	41	RECORD BASE AND RIM COMPL DEN	1	10
	49	BOX AND POUR IMPRESSION	1	10
		SUBTOTAL		317
		STATION TOTAL		22,609
		RDA TOTAL		22,609

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APPENDIX A-10

PROPOSED REPORTING FORM. QUARTERLY SUMMARY, PROSTHETIC LABORATORY WEIGHTED WORK UNITS

QUARTERLY SUMMARY - PROSTHETIC LABORATORY WEIGHTED WORK UNITS

ACTIVITY_____ FY_____ QTR_____

PROCEDURE NUMBER	PROCEDURE	UNITS	WEIGHT FACTOR	WEIGHTED UNITS
01	Fully Fabricated Fixed Partial Denture		40	
02	Casting Only, Fixed Partial Denture		28	
03	Veneer Only, Fixed Partial Denture		18	
04	Solder/Repair, Fixed Partial Denture		10	
05	Fully Fabricated Crowns		40	
06	Casting Only Crowns		28	
07	Veneer Only Crowns		18	
08	Glaze		5	
09	Partial Veneer Crowns/Onlays		28	
10	Casting		10	
11	Endodontic Posts		25	
12	Precision Connector, Fixed Partial Denture		50	
13	Andrews Bridge		150	
14	Temporary Bridge Former		10	
15	Periodontic Splint, Fixed		40	
16	Pour Cast, Fixed		1	
17	Impression Tray, Fixed or Removable		5	
18	Articulation, Adjustable		3	
19				
20	Casting Only, Removable Partial Denture		46	
21	Casting & Set-up, Removable Partial Denture		62	
22	Set-up Only, Removable Partial Denture		15	
23	Set-up & Process, Removable Partial Denture		25	
24	Process Only, Removable Partial Denture		10	
25	Fully Fabricated Removable Partial Denture		75	
26	Transitional, Removable Partial Denture		20	
27	Repair, Removable Partial Denture		12	
28	Reline & Rebase, Removable Partial Denture		10	
29	Precision Attachment, Removable Partial Denture		275	
30	Swing-lock, Removable Partial Denture		225	
31	Stressbreaker, Removable Partial Denture		180	
32	Bar-Clip, Removable Partial Denture		120	
33	Surgical Splint		50	
34	Altered Cast Tray		5	
35	Pour, Altered Cast		5	
36	Pour Cast, Preliminary, Master or Opposing		1	
37	Articulation Simple		1	
38				
39				
40	Impression Tray, Complete Denture		5	
41	Record Base & Rim		5	
42	Casting Base-Complete Denture		25	
43	Set-up & Wax-up, Complete Denture		20	
44	Process & Finish, Complete Denture		30	
45	Fully Fabricated, Complete Denture		48	

HSC Form_____

PROCEDURE NUMBER	PROCEDURE	WEIGHT UNITS	WEIGHTED FACTOR	WEIGHTED UNITS
46	Reline/Rebase, Complete Denture		20	
47	Repair Complete Denture		8	
48	Surgical Template		7	
49	Box & Pour Impression		5	
50	Articulation Semi-adjustable		2	
51				
52				
53				
54				
55				
56				
57				
58				
59				
60	Orthodontic Tooth Positioner		30	
61	Diagnostic Set-up		30	
62	Orthodontic Study Models		10	
63	Orthodontic Appliance		50	
64				
65				
66				
67				
68				
69				
70	Mouthguard Flexible		5	
71	Mouthguard Rigid		7	
72	Demonstration Model, Resin		40	
73	Demonstration Model, Stone		2	
74	Maxillo-facial Prostheses		10	
75	Special Projects		10	
	TOTAL WEIGHTED WORK UNITS			

	TOTALS - SELECTED PROCEDURES	UNITS	WWU
(01)	Fully Fabricated Fixed Partial Denture		
(05)	Fully Fabricated Crowns		
(22)	Set-up Only, Removable Partial Denture		
(23)	Set-up and Process, Removable Partial Denture		
(26)	Transitional Removable Partial Denture		
(43)	Set-up and Wax-up, Complete Denture		
(63)	Orthodontic Appliance		

PERSONNEL SUMMARY

MOS	TOTAL NO. ASGD	NUMBER BY GRADE	TECHNICIANS ASSIGNED TO OTHER DUTIES
42D			
42F			
GS683			

Signature _____

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